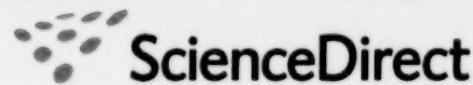


Available online at www.sciencedirect.com

Aquaculture 273 (2007) 752–756

Aquaculturewww.elsevier.com/locate/aqua-online

Contents of *Aquaculture*, Volume 273

VOL. 273 NO. 1**30 November 2007****Genetics**

Genetic improvement of farmed tilapias: Composition and genetic parameters of a synthetic base population of *Oreochromis niloticus* for selective breeding

A.E. Eknath (Penang, Malaysia), H.B. Bentsen (Ås, Norway), R.W. Ponzoni (Penang, Malaysia), M. Rye (Ås, Norway), N.H. Nguyen, J. Thodesen (Penang, Malaysia) and B. Gjerde (Ås, Norway)

1

Phenotypic and genetic parameters for body measurements, reproductive traits and gut length of Nile tilapia (*Oreochromis niloticus*) selected for growth in low-input earthen ponds

H. Charo-Karisa (Wageningen, The Netherlands; Abou Hammad, Egypt), H. Bovenhuis (Wageningen, The Netherlands), M.A. Rezk (Abou Hammad, Egypt), R.W. Ponzoni (Penang, Malaysia), J.A.M. van Arendonk and H. Komen (Wageningen, The Netherlands)

15

Using factorial mating designs to increase the effective number of breeders in fish hatcheries

C. Busack and C.M. Knudsen (Olympia, WA, USA)

24

Response to selection for harvest body weight of *Oreochromis shiranus*

A.O. Maluwa (Domasi, Malawi) and B. Gjerde (Ås, Norway)

33

Heritability for body weight at harvest size in the Pacific white shrimp, *Penaeus (Litopenaeus) vannamei*, from a multi-environment experiment using univariate and multivariate animal models

H. Castillo-Juárez (Coyoacán, México), J.C.Q. Casares (Mazatlán, México), G. Campos-Montes (Coyoacán, México), C.C. Villela, A.M. Ortega (Mazatlán, México) and H.H. Montaldo (Coyoacán, México)

42

Husbandry and Management

Simultaneous effects of nutritional and environmental factors on growth and flesh quality of *Perca fluviatilis* using a fractional factorial design study

J.-N. Gardeur, N. Mathis (Nancy, France), A. Kobilinsky (Jouy en Josas Cedex, France) and J. Brun-Bellut (Nancy, France)

50

The effect of trigger depth on self-feeder utilisation, growth and the vertical distribution of tank-held rainbow trout *Oncorhynchus mykiss* (Walbaum)

C. Noble, K. Mizusawa and M. Tabata (Yamanashi, Japan)

64

Reproductive performance and the growth of pre-stunted and normal Nile tilapia (*Oreochromis niloticus*) broodfish at varying feeding rates

R.C. Bhujel (Pathumthani, Thailand), D.C. Little (Stirling, Scotland, UK) and A. Hossain (Pathumthani, Thailand; Auckland, New Zealand)

71

Effects of temperature on the induced spawning of channel catfish and the production of channel × blue catfish hybrid fry

R.P. Phelps, R. Haste, A. Pendatar, L. Linley, N. Papanikos and R.A. Dunham (AL, United States)

80

The role of fatty acids enrichments in the larviculture of false percula clownfish *Amphiprion ocellaris*

M.A. Avella, I. Olivotto, G. Gioacchini, F. Maradonna and O. Carnevali (Ancona, Italy)

87

Nutrition

Nutrient digestibilities and gut function in Atlantic salmon (*Salmo salar*) fed diets with cellulose or non-starch polysaccharides from soy

O.F. Kraugerud (CoE, Ås, Norway), M. Penn (CoE, Oslo, Norway), T. Storebakken (CoE, Oslo, Norway), S. Refstie (CoE, Sundalsøra, Norway), Å. Krogdahl (CoE, Oslo, Norway) and B. Svhuis (CoE, Ås, Norway)

96

Survival and growth of western rock lobster *Panulirus cygnus* (George) fed formulated diets with and without fresh mussel supplement

D. Johnston, R. Melville-Smith and B. Hendriks (North Beach, Western Australia, Australia)

108

Replacement of fish meal with poultry by-product meal in diets formulated for the humpback grouper, *Cromileptes altivelis*

R. Shapawi (Kota Kinabalu, Malaysia), W.-K. Ng (Penang, Malaysia) and S. Mustafa (Kota Kinabalu, Malaysia)

118

Morphometric evaluation of changes in the digestive tract of rainbow trout (*Oncorhynchus mykiss*) due to fish meal replacement with soy protein concentrate

A.-M. Escaffre, S. Kaushik (Saint Péé sur Nieuvre, France) and M. Mambrini (Jouy-en-Josas Cedex, France)

127

The effect of dietary n-3 HUFA levels and DHA/EPA ratios on growth, survival and osmotic stress tolerance of Chinese mitten crab <i>Eriocheir sinensis</i> larvae	
L. Sui (Ghent, Belgium; Tianjin, China), M. Wille (Ghent, Belgium), Y. Cheng (Shanghai, China) and P. Sorgeloos (Ghent, Belgium)	139
Effects of dietary carbohydrate on growth of juvenile New Zealand rock lobsters, <i>Jasus edwardsii</i>	
C.A. Radford (Warkworth, New Zealand), I.D. Marsden, W. Davison (Christchurch, New Zealand) and A.G. Jeffs (Warkworth, New Zealand)	151
Effects of α-lipoic and ascorbic acid on the muscle and brain fatty acids and antioxidant profile of the South American pacu <i>Piaractus mesopotamicus</i>	
S. Trattner (Uppsala, Sweden; Columbus, OH, USA), J. Pickova (Uppsala, Sweden), K.H. Park (Republic of Korea), J. Rinchard (Brockport, NY, USA) and K. Dabrowski (Columbus, OH, USA)	158
Quantitative description of body composition and rates of nutrient deposition in rainbow trout (<i>Oncorhynchus mykiss</i>)	
A. Dumas, C.F.M. de Lange, J. France and D.P. Bureau (Guelph, Ontario, Canada)	165

**Special Issue: Smolt 2005: Proceedings of the 7th International Workshop on Salmonid Smoltification
VOL. 273 NOS. 2-3** 18 December 2007

Prologue and acknowledgements	
M. Iwata (Japan)	183

Migration and Behavior

The relationship between thyroxine surge and onset of downstream migration in chum salmon <i>Oncorhynchus keta</i> fry	
D. Ojima and M. Iwata (Japan)	185
Seasonal downstream movements of juvenile Atlantic salmon, <i>Salmo salar</i> L., with evidence of solitary migration of smolts	
W.D. Riley (Suffolk, UK)	194
Identification of an olfactory imprinting-related gene in the lacustrine sockeye salmon, <i>Oncorhynchus nerka</i>	
H. Hino, T. Iwai, M. Yamashita and H. Ueda (Sapporo, Japan)	200

Ion Transport

Molecular cloning and characterization of the taurine transporter of Atlantic salmon	
J.M. Zarate and T.M. Bradley (Kingston, RI, United States)	209
Effects of long-day on gill Na ⁺ , K ⁺ -ATPase gene expression and the development of seawater tolerance in sockeye salmon	
M. Ban, H. Ando and A. Urano (Sapporo, Japan)	218
The parr-smolt transformation of Arctic charr is comparable to that of Atlantic salmon	
E.H. Jørgensen, Ø. Aas-Hansen (Tromsø, Norway), S. Moriyama, M. Iwata (Japan) and J.E. Tau Strand (Norway)	227
Molecular mechanisms of continuous light inhibition of Atlantic salmon parr-smolt transformation	
S.O. Stefansson, T.O. Nilsen, L.O.E. Ebbesson (Bergen, Norway), A. Wargelius (Norway), S.S. Madsen (Odense, Denmark), B.Th. Björnsson (Göteborg, Sweden) and S.D. McCormick (MA, USA)	235

Genetics

Altered smolt timing for masu salmon <i>Oncorhynchus masou</i> resulting from domestication	
T. Koyama, M. Nagata, Y. Miyakoshi, H. Hayano (Japan) and J.R. Irvine (Nanaimo, B.C., Canada)	246
Comparison of parr-smolt transformation in hatchery reared offspring of one domesticated and two wild populations of Atlantic salmon (<i>Salmo salar</i> L.)	
J.E.T. Strand (Norway), H.K. Johnsen and A.M. Arnesen (Tromsø, Norway)	250
Population specific smolt development, migration and maturity schedules in Atlantic salmon in a natural river environment	
P. McGinnity, E. de Eyto, T.F. Cross, J. Coughlan, K. Whelan (Newport, Cork, Ireland) and A. Ferguson (Belfast, Northern Ireland, UK)	257

Natural Environment

Effect of daily oscillation in temperature and increased suspended sediment on growth and smolting in juvenile chinook salmon, <i>Oncorhynchus tshawytscha</i>	
J.M. Shrimpton (Prince George, BC, Canada), J.D. Zydlewski (Orono, ME, USA) and J.W. Heath (Campbell River, BC, Canada)	269
Migratory behaviour in relation to smolt development and releasing strategies in Atlantic salmon (<i>Salmo salar</i> L.) smolts	
R. Strand and B. Finstad (Trondheim, Norway)	277

Nutrition

Effects of diets supplemented with iron citrate on some physiological parameters and on burst swimming velocity in smoltifying hatchery-reared masu salmon (<i>Oncorhynchus masou</i>)	
S. Mizuno, N. Misaka, D. Ando, M. Torao, H. Urabe and T. Kitamura (Japan)	284

Parr-smolt transformation and dietary vegetable lipids affect intestinal nutrient uptake, barrier function and plasma cortisol levels in Atlantic salmon F. Jutfelt (Göteborg, Sweden), R.E. Olsen (Norway), B.T. Björnsson and K. Sundell (Göteborg, Sweden)	298
Endocrinology	
Effects of somatostatin on the growth hormone-insulin-like growth factor axis and seawater adaptation of rainbow trout (<i>Oncorhynchus mykiss</i>) J. Poppinga, J. Kittilson (Fargo, ND, USA), S.D. McCormick (MA, USA) and M.A. Sheridan (Fargo, ND, USA)	312
Response of the salmon somatotropic axis to growth hormone administration under two different salinities M. Shimizu, H. Fukada (Seattle, WA, USA), A. Hara (Hakodate, Japan) and W.W. Dickhoff (Seattle, WA, USA)	320
Seasonal changes in plasma thyroxine kinetics in coho salmon <i>Oncorhynchus kisutch</i> during smoltification D. Ojima and M. Iwata (Japan)	329
Differential hormonal responses of Atlantic salmon parr and smolt to increased daylength: A possible developmental basis for smolting S.D. McCormick (Turners Falls, MA, USA), J.M. Shrimpton (Prince George, B.C., Canada), S. Moriyama (Japan) and B.T. Björnsson (Sweden)	337
Exposure to continuous light disrupts retinal innervation of the preoptic nucleus during parr-smolt transformation in Atlantic salmon L.O.E. Ebbesson (Bergen, Norway), S.O.E. Ebbesson (Charlottesville, VA, USA), T.O. Nilsen, S.O. Stefansson (Bergen, Norway) and B. Holmqvist (Lund, Sweden)	345

Pollution and Endocrine Disruptors

The impact of a pesticide on migratory activity and olfactory function in Atlantic salmon (<i>Salmo salar</i> L.) smolts A. Moore, N. Lower (Suffolk, UK), I. Mayer (Bergen, Norway) and L. Greenwood (Suffolk, UK)	350
Exposure to moderate acid water and aluminum reduces Atlantic salmon post-smolt survival F. Kroglund (Grimstad, Norway), B. Finstad (Trondheim, Norway), S.O. Stefansson, T.O. Nilsen (Bergen, Norway), T. Kristensen (Oslo, Norway), B.O. Rosseland, H.C. Teien and B. Salbu (Ås, Norway)	360
Salmon lice or suboptimal water quality — Reasons for reduced postsmolt survival? B. Finstad (Trondheim, Norway), F. Kroglund (Grimstad, Norway), R. Strand (Trondheim, Norway), S.O. Stefansson (Bergen, Norway), P.A. Bjørn (Tromsø, Norway), B.O. Rosseland (Norway), T.O. Nilsen (Bergen, Norway) and B. Salbu (Norway)	374
Epilogue: Past successes, present misconceptions and future milestones in salmon smoltification research B.T. Björnsson (Göteborg, Sweden) and T.M. Bradley (Kingston, RI, USA)	384

VOL. 273 NO. 4

20 December 2007

Diseases

Disease of rainbow trout caused by <i>Pseudomonas luteola</i> I. Altinok (Trabzon, Turkey), F. Balta (Rize, Turkey), E. Capkin (Trabzon, Turkey) and S. Kayis (Rize, Turkey)	393
Chicken-derived IgY recognizes developing and mature stages of <i>Loma salmonae</i> (Microsporidia) in Pacific salmon, <i>Oncorhynchus</i> spp. C.A. Young (Victoria, B.C., Canada), F.G. Silversides (Agassiz, B.C., Canada) and S.R.M. Jones (Victoria, Nanaimo, B.C., Canada)	398
Exposure to probiotics and β-1,3/1,6-glucans in larviculture modifies the immune response of <i>Penaeus vannamei</i> juveniles and both the survival to White Spot Syndrome Virus challenge and pond culture J. Rodríguez, Y. Espinosa, F. Echeverría (Guayaquil, Ecuador), G. Cárdenas (Bahía de Caraquez, Ecuador), R. Román (Trabzon, Turkey) and S. Stern (Guayaquil, Ecuador)	405
Experimental approach on the selection and persistence of anti-microbial-resistant Aeromonads in faecal matter of rainbow trout during and after an oxolinic acid treatment H. Le Bris, R. Dhaouadi, M. Naviner, E. Giraud, C. Mangion, F. Armand, N. De La Cotte, C. Thorin, J.-P. Ganière and H. Pouliquen (Nantes Cedex, France)	416
Rotifer cellular membranes bind to white spot syndrome virus (WSSV) D.-C. Yan (Yantai, PR China), S.-Y. Feng (Zhengzhou, PR China), J. Huang and S.-L. Dong (Qingdao, PR China)	423
Histopathology of "hole-in-the-head" disease in the Nile Tilapia, <i>Oreochromis niloticus</i> C.M. Morrison (Halifax, NS, Canada), D. O'Neil (Halifax, Nova Scotia, Canada) and J.R. Wright Jr. (Calgary, Alberta, Canada)	427

Genetics

Accuracy of pairwise methods in the reconstruction of family relationships, using molecular information from turbot (<i>Scophthalmus maximus</i>) S.T. Rodríguez-Ramilo, M.Á. Toro (Madrid, Spain), P. Martínez, J. Castro, C. Bouza (Lugo, Spain) and J. Fernández (Madrid, Spain)	434
--	-----

Husbandry and Management

Prey ingestion and live food selectivity of marble goby (<i>Oxyeleotris marmorata</i>) using rice field prawn (<i>Macrobrachium lanchesteri</i>) as prey N.P. Hoa (Pathumthai, Thailand) and Y. Yi (Shanghai, China)	443
Growth performance of the rotifers <i>Brachionus plicatilis</i> , <i>B. 'Nevada'</i> and <i>B. 'Cayman'</i> under different food concentrations V. Kostopoulou (Athens, Greece) and O. Vadstein (Trondheim, Norway)	449
A method to eliminate self-fertilization in a simultaneous hermaphrodite scallop. 1. Effects on growth and survival of larvae and juveniles G. Martínez, L. Mettifogo, M.A. Pérez and C. Callejas (Coquimbo, Chile)	459

Formation of periphyton biofilm and subsequent biofouling on different substrates in nutrient enriched brackishwater shrimp ponds H. Khatoon, F. Yusoff, S. Banerjee, M. Shariff and J.S. Bujang (Serdang, Malaysia).....	470
Towards development of large-scale hatchery cultivation of larvae and spat of the pearl oyster <i>Pinctada mazatlanica</i> in Mexico P.E. Saucedo, P. Ormart-Castro and M. Osuna-García (La Paz, Mexico).....	478
The effect of stocking density of Chinese mitten crab <i>Eriocheir sinensis</i> on rice and crab seed yields in rice-crab culture systems X. Li , S. Dong (Qingdao, PR China), Y. Lei (Dalian, PR China) and Y. Li (Dalian, PR China).....	487
Growth, survival and biochemical composition of spider crab <i>Maja brachydactyla</i> (Balss, 1922) (Decapoda: Majidae) larvae reared under different stocking densities, prey:larva ratios and diets M. Andrés, A. Estévez and G. Rotllant (Spain)	494
Setting of a procedure for experimental incubation of Pacific oyster (<i>Crassostrea gigas</i>) embryos M. Suquet, C. Amourda, C. Mingant, I. Quéau, L. Lebrun (Argenton, France) and R. Brizard (La Tremblade, France).....	503
Grow-out of sandfish <i>Holothuria scabra</i> in ponds shows that co-culture with shrimp <i>Litopenaeus stylostris</i> is not viable J.D. Bell, N.N. Agudo, S.W. Purcell, P. Blazer, M. Simutoga, D. Pham and L.D. Patrona (Noumea, Cedex, New Caledonia)	509
Effects of silver carp and the small indigenous fish mola <i>Amblypharyngodon mola</i> and punti <i>Puntius sophore</i> on fish polyculture production A. Kadir, M.A. Wahab (Mymensingh, Bangladesh), A. Milstein (Carmel, Israel), M.A. Hossain and M.T.I. Seraji (Mymensingh, Bangladesh).....	520
Nutrition	
Effect of dietary arachidonic acid, eicosapentaenoic acid and docosahexaenoic acid on survival, growth and pigmentation in larvae of common sole (<i>Solea solea</i> L.) I. Lund, S.J. Steenfeldt (Hirtshals, Denmark) and B.W. Hansen (Roskilde, Denmark)	532
Feeding regime does not influence lysine utilisation by Atlantic salmon, <i>Salmo salar</i> L., parr R.C. Hauler, C.G. Carter and S.J. Edwards (Launceston, Tasmania, Australia)	545
Digesta characteristics in relation to nutrient digestibility and mineral absorption in Nile tilapia (<i>Oreochromis niloticus</i> L.) fed cereal grains of increasing viscosity J.I. Leenhouters, R.C. Ortega, J.A.J. Verreth and J.W. Schrama (Wageningen, The Netherlands)	556
Controlling the growth of a cyanobacterial contaminant, <i>Synechococcus</i> sp., in a culture of <i>Tetraselmis chui</i> (PLY429) by varying pH: Implications for outdoor aquaculture production S.L. Meseck (Milford, CT, USA)	566
Enhanced production of the sea urchin <i>Paracentrotus lividus</i> in integrated open-water cultivation with Atlantic salmon <i>Salmo salar</i> E.J. Cook and M.S. Kelly (Argyll, United Kingdom)	573
Influence of dietary protein on essential fatty acids in the gonadal tissue of the sea urchins <i>Psammechinus miliaris</i> and <i>Paracentrotus lividus</i> (Echinodermata) E.J. Cook (Argyll, United Kingdom), A.D. Hughes (Columbus, Ohio, United States), H. Orr, M.S. Kelly and K.D. Black (Argyll, United Kingdom)	586
Effect of different dietary taurine levels on the conjugated bile acid composition and growth performance of juvenile and fingerling Japanese flounder <i>Paralichthys olivaceus</i> S.-K. Kim, H. Matsunari, T. Takeuchi (Tokyo, Japan), M. Yokoyama (Mie, Japan), Y. Murata and K. Ishihara (Kanagawa, Japan)	595
Effect of dietary supplementation of phospholipids and highly unsaturated fatty acids on reproductive performance and offspring quality of Chinese mitten crab, <i>Eriocheir sinensis</i> (H. Milne-Edwards), female broodstock X. Wu, Y. Cheng (Shanghai, Japan), L. Sui (Tianjian, China), C. Zeng, P.C. Southgate (Townsville, Queensland, Australia) and X. Yang (Shanghai, China)	602
Development of lipid microbeads for delivery of lipid and water-soluble materials to <i>Artemia</i> A. Nordgreen, K. Hamre (Bergen, Norway) and C. Langdon (Newport, OR, USA)	614
The effect of the addition of algae feeding stimulants to artificial diets for the sea urchin <i>Tripneustes gratilla</i> S.A. Dworjanyn (Taylors Beach, Coffs Harbour, NSW, Australia), I. Pirozzi and W. Liu (Taylors Beach, NSW, Australia)	624
Dietary lysine requirement of juvenile cobia (<i>Rachycentron canadum</i>) Q.-C. Zhou, Z.-H. Wu, S.-Y. Chi and Q.-H. Yang (Zhanjiang, PR China)	634
The effects of fish hydrolysate (CPSP) level on <i>Octopus maya</i> (Voss and Solis) diet: Digestive enzyme activity, blood metabolites, and energy balance J. Aguilera (Yucatán, Mexico), G. Cuzon (Tahiti, French Polynesia), C. Pascual (Yucatán, Mexico), P.M. Domingues (Huelva, Spain), G. Gaxiola, A. Sánchez (Yucatán, Mexico), T. Maldonado (Campeche, Mexico) and C. Rosas (Yucatán, Mexico)	641
The effects of algal diets on population growth and egg hatching success of the tropical calanoid copepod, <i>Acartia sinjiensis</i> M. Milione, C. Zeng and Tropical Crustacean Aquaculture Research Group (Townsville, Queensland, Australia)	656
Physiology and Endocrinology	
Do strain differences in microalgae alter their relative quality as a food for the rotifer <i>Brachionus plicatilis</i> ? F.A.Q. Sayegh, N. Radi (Jeddah, Kingdom of Saudi Arabia) and D.J.S. Montagnes (Liverpool, United Kingdom)	665
Effect of salinity at constant 10 °C on grow-out of anadromous Arctic charr from Labrador J. Duston, T. Astatkie and S.B. Murray (Truro, NS, Canada)	679

The effect of dietary lipid and protein source on the swimming performance, recovery ability and oxygen consumption of Atlantic salmon (<i>Salmo salar</i>) C.M. Wilson (Manchester, United Kingdom), E.N. Friesen (Vancouver, BC, Canada), D.A. Higgs and A.P. Farrell (West Vancouver, BC, Canada)	687
The reproductive biology of the baby clam, <i>Marcia opima</i> , from two geographically separated areas of India N. Suja and P. Muthiah (India)	700
Effects of salinity and pH on ion-transport enzyme activities, survival and growth of <i>Litopenaeus vannamei</i> postlarvae L.-Q. Pan, L.-J. Zhang and H.-Y. Liu (Qingdao, China)	711
A radiological study on the development of vertebral deformities in cultured Atlantic salmon (<i>Salmo salar</i> L.) P.G. Fjelldal, T.J. Hansen and A.E. Berg (Materdal, Norway)	721
Additive effects of advanced temperature and photoperiod regimes and LHRHa injection on ovulation in Atlantic salmon (<i>Salmo salar</i>) H.R. King (Wayatinah, Launceston, Tasmania, Australia) and N.W. Pankhurst (Gold Coast Mail Centre, Queensland, Australia)	729
Short Communications	
No AFLP sex-specific markers detected in <i>Pangasianodon gigas</i> and <i>P. hypophthalmus</i> K. Sripairoj, U. Na-Nakorn (Bangkok, Thailand), J.P. Brunelli and G.H. Thorgaard (Pullman, WA, USA)	739
Distribution of lipid droplets is an indicator for egg quality in brown trout, <i>Salmo trutta fario</i> N. Mansour, F. Lahnsteiner and R.A. Patzner (Hellbrunnerstrasse, Salzburg, Austria)	744
Broken eggs decrease pH of rainbow trout (<i>Oncorhynchus mykiss</i>) ovarian fluid G.J. Dietrich, M. Wojtczak, M. Słowińska (Olsztyn, Poland), S. Dobosz, H. Kuźmiński (Zukowo, Poland) and A. Ciereszko (Olsztyn, Poland)	748
Contents of Aquaculture, Volume 273	752

Contents (continued)

Husbandry and Management

Prey ingestion and live food selectivity of marble goby (<i>Oxyeleotris marmorata</i>) using rice field prawn (<i>Macrobrachium lanchesteri</i>) as prey N.P. Hoa (Pathumthai, Thailand) and Y. Yi (Shanghai, China)	443
Growth performance of the rotifers <i>Brachionus plicatilis</i> , <i>B. 'Nevada'</i> and <i>B. 'Cayman'</i> under different food concentrations V. Kostopoulou (Athens, Greece) and O. Vadstein (Trondheim, Norway).	449
A method to eliminate self-fertilization in a simultaneous hermaphrodite scallop. 1. Effects on growth and survival of larvae and juveniles G. Martinez, L. Mettifogo, M.A. Perez and C. Callejas (Coquimbo, Chile)	459
Formation of periphyton biofilm and subsequent biofouling on different substrates in nutrient enriched brackishwater shrimp ponds H. Khatoon, F. Yusoff, S. Banerjee, M. Shariff and J.S. Bujang (Serdang, Malaysia).	470
Towards development of large-scale hatchery cultivation of larvae and spat of the pearl oyster <i>Pinctada mazatlanica</i> in Mexico P.E. Saucedo, P. Ormar-Castro and M. Osuna-García (La Paz, Mexico)	478
The effect of stocking density of Chinese mitten crab <i>Eriocheir sinensis</i> on rice and crab seed yields in rice-crab culture systems X. Li , S. Dong (Qingdao, PR China), Y. Lei (Dalian, PR China) and Y. Li (Dalian, PR China)	487
Growth, survival and biochemical composition of spider crab <i>Maja brachydactyla</i> (Balss, 1922) (Decapoda: Majidae) larvae reared under different stocking densities, prey:larva ratios and diets M. Andrés, A. Estévez and G. Rotllant (Spain)	494
Setting of a procedure for experimental incubation of Pacific oyster (<i>Crassostrea gigas</i>) embryos M. Suquet, C. Amourda, C. Mingant, I. Quéau, L. Lebrun (Argenton, France) and R. Brizard (La Tremblade, France)	503
Grow-out of sandfish <i>Holothuria scabra</i> in ponds shows that co-culture with shrimp <i>Litopenaeus stylirostris</i> is not viable J.D. Bell, N.N. Agudo, S.W. Purcell, P. Blazer, M. Simutoga, D. Pham and L.D. Patrona (Noumea, Cedex, New Caledonia)	509
Effects of silver carp and the small indigenous fish mola <i>Amblypharyngodon mola</i> and punti <i>Puntius sophore</i> on fish polyculture production A. Kadir, M.A. Wahab (Mymensingh, Bangladesh), A. Milstein (Carmel, Israel), M.A. Hossain and M.T.I. Seraji (Mymensingh, Bangladesh)	520

Nutrition

Effect of dietary arachidonic acid, eicosapentaenoic acid and docosahexaenoic acid on survival, growth and pigmentation in larvae of common sole (<i>Solea solea</i> L.) I. Lund, S.J. Steenfeldt (Hirtshals, Denmark) and B.W. Hansen (Roskilde, Denmark)	532
Feeding regime does not influence lysine utilisation by Atlantic salmon, <i>Salmo salar</i> L., parr R.C. Hauler, C.G. Carter and S.J. Edwards (Launceston, Tasmania, Australia)	545
Digesta characteristics in relation to nutrient digestibility and mineral absorption in Nile tilapia (<i>Oreochromis niloticus</i> L.) fed cereal grains of increasing viscosity J.I. Leenhouters, R.C. Ortega, J.A.J. Verreth and J.W. Schrama (Wageningen, The Netherlands)	556
Controlling the growth of a cyanobacterial contaminant, <i>Synechococcus</i> sp., in a culture of <i>Tetraselmis chui</i> (PLY429) by varying pH: Implications for outdoor aquaculture production S.L. Meseck (Milford, CT, USA)	566
Enhanced production of the sea urchin <i>Paracentrotus lividus</i> in integrated open-water cultivation with Atlantic salmon <i>Salmo salar</i> E.J. Cook and M.S. Kelly (Argyll, United Kingdom)	573
Influence of dietary protein on essential fatty acids in the gonadal tissue of the sea urchins <i>Psammechinus miliaris</i> and <i>Paracentrotus lividus</i> (Echinodermata) E.J. Cook (Argyll, United Kingdom), A.D. Hughes (Columbus, Ohio, United States), H. Orr, M.S. Kelly and K.D. Black (Argyll, United Kingdom)	586
Effect of different dietary taurine levels on the conjugated bile acid composition and growth performance of juvenile and fingerling Japanese flounder <i>Paralichthys olivaceus</i> S.-K. Kim, H. Matsunari, T. Takeuchi (Tokyo, Japan), M. Yokoyama (Mie, Japan), Y. Murata and K. Ishihara (Kanagawa, Japan)	595

Contents (continued)

Effect of dietary supplementation of phospholipids and highly unsaturated fatty acids on reproductive performance and offspring quality of Chinese mitten crab, <i>Eriocheir sinensis</i> (H. Milne-Edwards), female broodstock X. Wu, Y. Cheng (Shanghai, Japan), L. Sui (Tianjian, China), C. Zeng, P.C. Southgate (Townsville, Queensland, Australia) and X. Yang (Shanghai, China)	602
Development of lipid microbeads for delivery of lipid and water-soluble materials to <i>Artemia</i> A. Nordgreen, K. Hamre (Bergen, Norway) and C. Langdon (Newport, OR, USA)	614
The effect of the addition of algae feeding stimulants to artificial diets for the sea urchin <i>Tripneustes gratilla</i> S.A. Dworjanyn (Taylors Beach, Coffs Harbour, NSW, Australia), I. Pirozzi and W. Liu (Taylors Beach, NSW, Australia)	624
Dietary lysine requirement of juvenile cobia (<i>Rachycentron canadum</i>) Q.-C. Zhou, Z.-H. Wu, S.-Y. Chi and Q.-H. Yang (Zhanjiang, PR China)	634
The effects of fish hydrolysate (CPSP) level on <i>Octopus maya</i> (Voss and Solis) diet: Digestive enzyme activity, blood metabolites, and energy balance J. Aguila (Yucatán, Mexico), G. Cuzon (Tahiti, French Polynesia), C. Pascual (Yucatán, Mexico), P.M. Domingues (Huelva, Spain), G. Gaxiola, A. Sánchez (Yucatán, Mexico), T. Maldonado (Campeche, Mexico) and C. Rosas (Yucatán, Mexico)	641
The effects of algal diets on population growth and egg hatching success of the tropical calanoid copepod, <i>Acartia sinjiensis</i> M. Milione, C. Zeng and Tropical Crustacean Aquaculture Research Group (Townsville, Queensland, Australia)	656
Physiology and Endocrinology	
Do strain differences in microalgae alter their relative quality as a food for the rotifer <i>Brachionus plicatilis</i> ? F.A.Q. Sayegh, N. Radi (Jeddah, Kingdom of Saudi Arabia) and D.J.S. Montagnes (Liverpool, United Kingdom)	665
Effect of salinity at constant 10 °C on grow-out of anadromous Arctic charr from Labrador J. Duston, T. Astatkie and S.B. Murray (Truro, NS, Canada)	679
The effect of dietary lipid and protein source on the swimming performance, recovery ability and oxygen consumption of Atlantic salmon (<i>Salmo salar</i>) C.M. Wilson (Manchester, United Kingdom), E.N. Friesen (Vancouver, BC, Canada), D.A. Higgs and A.P. Farrell (West Vancouver, BC, Canada)	687
The reproductive biology of the baby clam, <i>Marcia opima</i> , from two geographically separated areas of India N. Suja and P. Muthiah (India)	700
Effects of salinity and pH on ion-transport enzyme activities, survival and growth of <i>Litopenaeus vannamei</i> postlarvae L.-Q. Pan, L.-J. Zhang and H.-Y. Liu (Qingdao, China)	711
A radiological study on the development of vertebral deformities in cultured Atlantic salmon (<i>Salmo salar</i> L.) P.G. Fjelldal, T.J. Hansen and A.E. Berg (Matredal, Norway)	721
Additive effects of advanced temperature and photoperiod regimes and LHRHa injection on ovulation in Atlantic salmon (<i>Salmo salar</i>) H.R. King (Wayatinah, Launceston, Tasmania, Australia) and N.W. Pankhurst (Gold Coast Mail Centre, Queensland, Australia)	729
Short Communications	
No AFLP sex-specific markers detected in <i>Pangasianodon gigas</i> and <i>P. hypophthalmus</i> K. Sriphairoj, U. Na-Nakorn (Bangkok, Thailand), J.P. Brunelli and G.H. Thorgaard (Pullman, WA, USA)	739
Distribution of lipid droplets is an indicator for egg quality in brown trout, <i>Salmo trutta fario</i> N. Mansour, F. Lahnsteiner and R.A. Patzner (Hellbrunnerstrasse, Salzburg, Austria)	744
Broken eggs decrease pH of rainbow trout (<i>Oncorhynchus mykiss</i>) ovarian fluid G.J. Dietrich, M. Wojtczak, M. Słowińska (Olsztyn, Poland), S. Dobosz, H. Kuźmiński (Zukowo, Poland) and A. Ciereszko (Olsztyn, Poland)	748
Contents of <i>Aquaculture</i> , Volume 273	752